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Surgical management and outcomes of rare adult ıntussusception: A single tertiary center experience

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Abstract

Aim: Intussusception in adults is a rare condition. Since it is usually associated with an underlying intestinal pathology, surgical treatment is typically required. This study aims to evaluate cases of intussusception managed at a tertiary care center.

Material and Methods: This retrospective study was conducted in the Department of General Surgery at Kocaeli University Faculty of Medicine. Patients who underwent surgery for intussusception between January 1, 2015, and January 1, 2025, were included in the study. The cases were categorized into enteroenteric, ileocolic, and colocolic subgroups and compared in terms of clinical and pathological data. Demographic and clinical characteristics of the patients were obtained through a review of medical records.

Results: A total of 12 patients underwent surgery for intussusception. The mean age of the patients was 45.4 years. Of these, 9 were classified as having enteroenteric, 2 ileocolic, and 1 colocolic intussusception. The most common presenting symptom was abdominal pain (73.3%). The most frequent etiology was small bowel tumors (33.3%). Segmental small bowel resection was the most commonly performed surgical procedure (41.7%). Histopathological evaluation revealed submucosal lipoma as the most common finding (22.2%). Among the ileocolic cases, one patient was diagnosed with adenocarcinoma.

Discussion: Surgical resection of the affected bowel segment is the mainstay of treatment for intussusception in adults. Although benign etiologies are more commonly observed in small bowel cases, it is important to note that malignancies may be present, particularly in ileocolic and colocolic types. Therefore, surgical procedures should be performed with careful consideration of this possibility.

Keywords

Adult, Intussusception, Emergency, Surgical Treatment, Bowel Resection

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Introduction

Intussusception in adults is a rare condition. It accounts for 1–5% of mechanical bowel obstructions [1-5]. Unlike in children, adult intussusceptions are generally caused by an underlying pathology within the intestinal lumen.

Intussusception has been reported to occur more frequently in patients with acquired immunodeficiency syndrome (AIDS). This is attributed to the higher incidence of infectious and neoplastic conditions in the intestines of these patients, such as lymphoid hyperplasia, Kaposi's sarcoma, and non-Hodgkin lymphoma [3].

There are various classifications of intussusception. One classification is based on etiology: benign, malignant causes, and idiopathic. Another classification is based on localization. Intussusceptions confined to the small intestine are termed enteroenteric; those involving prolapse of the terminal ileum into the colon are ileocolic intussusceptions; and intussusceptions confined to the large intestine are referred to as colocolic intussusceptions [3-7].

Intermittent abdominal pain is the most common presenting symptom in adults; however, patients may also present with symptoms of intermittent partial bowel obstruction, such as nausea, vomiting, melena, weight loss, fever, and constipation. While diagnosis is often made by ultrasonography in children, it is usually established by abdominal computed tomography (CT) in adults. The 'target sign' observed on CT is the most characteristic finding of intussusception [3, 4].

Causes of intussusception in adults generally require surgical treatment. Therefore, reduction and/or various resection procedures are frequently performed [8-10].

The aim of this study is to evaluate the etiology, clinical presentation, surgical management, and pathological outcomes of this rare condition in adults. For this purpose, data from a tertiary care hospital were analyzed.

Material and Methods

Trial Design

This retrospective study was conducted in the Department of General Surgery at Kocaeli University Faculty of Medicine. Written informed consent was obtained from all individual participants included in the study. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Participants and Eligibility Criteria

Adult patients who underwent surgery with a preliminary diagnosis of intussusception between January 1, 2015, and January 1, 2025, were included in the study.

Inclusion criteria were: patients over 18 years of age and those operated on due to intussusception.

Exclusion criteria were: patients under 18 years of age, patients treated medically for intussusception, and patients operated on for causes other than intussusception.

Outcomes

The medical records of the included patients were reviewed to collect clinical data such as demographic characteristics (age, gender), presenting symptoms, preoperative imaging methods, etiology, surgical procedures performed, and pathological results. Patients were categorized into subgroups based on the type of intussusception: enteroenteric, ileocolic, and colocolic, and demographic and clinical data were compared among these groups.

The primary outcome was the underlying causes of intussusception, while secondary outcomes included clinical data such as the surgical procedures performed and pathological findings.

Statistical Analysis

Data were presented as means and medians (min–max) for quantitative variables and percentages for qualitative variables. Statistical analysis was performed with SPSS version 22.0, and $p < 0.05$ was considered significant.

Ethical Approval

This study was approved by the Ethics Committee of Kocaeli University, Faculty of Medicine (Date: 2025-04-24, No: KÜ GOKAEK-2025/09/11).

Results

Twelve patients who underwent surgery for intussusception between January 1, 2015, and January 1, 2025, were included in the study. The mean age of the patients was 45.4 years. Half

Table 1. Comparison of surgical and pathological characteristics of patients

	Total (n = 12)
Age (year)	45.4 ± 15.9
Gender (Male/Female)	6.6
Presenting Complaints	
Abdominal pain	11 (73.3%)
Nausea and vomiting	3 (20%)
Diarrhea	1 (6.7%)
Diagnostic Methods	
Ultrasonography	1 (8.3%)
Computed Tomography	11 (91.7%)
Etiology	
Small bowel tumor	4 (33.3%)
Meckel's diverticulum	2 (16.7%)
Colon tumor	2 (16.7%)
Adhesion	2 (16.7%)
Idiopathic	2 (16.7%)
Surgical Methods	
Enterotomy and polypectomy	1 (8.3%)
Segmental small bowel resection	5 (41.7%)
Hemicolectomy	2 (16.7%)
Appendectomy	1 (8.3%)
Adhesiolysis	1 (8.3%)
Laparotomy and reduction	2 (16.7%)
Pathology Results	
Hamartomatous polyp	1 (11.1%)
Burkitt lymphoma	1 (11.1%)
Submucosal lipoma	2 (22.2%)
Adenocarcinoma	1 (11.1%)
Reactive lymphoid hyperplasia	1 (11.1%)
Malignant melanoma	1 (11.1%)
Meckel's diverticulum	2 (22.2%)

Data are presented as mean ± standard deviation, median (minimum-maximum), and frequency

of the patients were male (n = 6) and half were female (n = 6) (Table 1). Intussusception types were enteroenteric (EE) in 9 patients (75%), ileocolic (IC) in 2 patients (16.7%), and colocolic (CC) in 1 patient (8.3%). The mean ages were 45.4 years. The male-to-female ratios were 6:6 (Table 1).

Abdominal pain was the most common presenting symptom across all patients (73.3%). Diagnosis was established by CT scan in 11 patients (91.7%), while only one patient (8.3%) in the EE group was diagnosed by ultrasonography (Table 1) (Figure 1).

Small bowel tumors were the most frequent etiology across all patient groups (33.4%) (Figure 2). In the EE group, small bowel tumors were the leading cause (44.4%), whereas in the IC and CC groups, colonic tumors accounted for 100% of cases. Segmental small bowel resection was the most commonly performed surgical procedure in all patients (41.7%) (Table 1). Pathological examination revealed submucosal lipoma and Meckel's diverticulum as the most common findings in all patients (22.2% each) (Table 1).

Figure 1. CT image of an enteric intussusception case

Figure 2. Intraoperative image of a patient with intussusception due to a small bowel tumor

Discussion

Intussusception is a rare condition in adults; however, it should be considered in the differential diagnosis of patients presenting with symptoms such as abdominal pain, nausea, and vomiting. Previous studies in the literature have reported a higher incidence in middle-aged patients, typically around 45 to 52 years of age [11, 12]. Similarly, the mean age of patients in our study was approximately 45 years.

Kim reported in a study including 28 patients that the most common presenting symptom was abdominal pain [11]. A systematic review published in 2024 also identified abdominal pain as the most frequent presenting complaint, occurring in 86% of cases [12]. Consistent with the literature, abdominal pain was the most common presenting symptom in our study as well (73.3%).

Diagnosis of intussusception in patients is predominantly established by computed tomography (CT). A systematic review reported a CT diagnosis rate of 88.5% [12], while Neymark et al. reported a 100% CT diagnosis rate [13]. In our study, this rate was also notably high at 91.7%.

In the study conducted by Neymark et al., enteroenteric (EE) intussusceptions were reported as the most common type, accounting for 73% of cases [13]. Conversely, Kim reported ileocolic (IC) intussusceptions as the most frequent, with a rate of 36% [11]. A systematic review including approximately 1900 patients indicated colocolic (CC) intussusceptions as the most prevalent type, occurring in 16.8% of cases [12]. As observed, there is no clear consensus in the literature regarding the most common type of intussusception. In our study, EE intussusceptions were the most frequently detected type (75%).

In Kim's study, idiopathic causes were most commonly identified in both small bowel and colonic intussusceptions [11]. In contrast, Su et al. reported that malignancies were the most frequent causes in colonic intussusceptions, whereas benign small bowel tumors were predominant in small bowel intussusceptions [14]. Meera and colleagues found that malignancies were the leading causes of intussusceptions in their study [15]. In our study, small bowel tumors were identified as the most common cause.

Kim reported that lipomas were the most frequently observed lesions in the pathological evaluation of resections [11]. Similarly, Neymark et al. also identified lipomas as the most common finding [13]. In contrast, Su et al. reported that adenomas were the predominant pathology in small bowel intussusceptions, whereas adenocarcinomas were most frequently observed in colonic cases [14]. In our study, the most common pathological findings were lipomas and Meckel's diverticula. Among small bowel cases, Meckel's diverticulum was the most frequently detected pathology, while adenocarcinoma incidence was higher in colonic intussusceptions.

Limitation

The major limitation of this study is its retrospective design

and small case series, which may be attributed to the rarity of intussusception in adults.

Conclusion

In conclusion, although intussusception is rare, it does occur in adults. It is mostly associated with underlying benign small bowel tumors. However, especially in colonic intussusception cases, the likelihood of an underlying malignancy is increased, and surgical procedures should be performed following oncological principles.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and Human Rights Statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or compareable ethical standards.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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